

3/30/00

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A quality assured network service provision system compatible with a multi-domain network, wherein

a communication network comprising a plurality of operations management networks (domains) which are connected to a plurality of customer networks with user terminals and which are respectively managed by different providers, the system comprising:

a network service management device incorporated within an operations management network of each of said providers, and negotiating with another operations management network which is managed by another provider and with which interconnection is to be established based on a required quality level from a customer so as to ensure an end-to-end quality level; and

a service broker device at the functional host layer of said network service management device for the service broker device receiving service information on services which can be provided by the respective domains and domain information which are output from the network service management device which belongs to each of the providers, storing information on the operations management networks managed by the respective providers, and brokering a service level agreement between the operations management networks of said plurality of providers by selecting route information and a network service management device for ensuring an end-to-end quality level required by the customer based on the received service information and domain information.

2. (Currently Amended) The quality assured network service provision system compatible with a multi-domain network according to claim 1, wherein

said network service management device comprises an outputting device for outputting the service information on services which can be provided by each of said providers and the domain information to a multi-service broker; and

said service broker device comprises a device for storing output information from each network service management device, selecting a network service management device of a domain which will satisfy athe required quality level when a network service request is generated by athe customer, and issuing instructions for introducing and setting domain information which satisfies athe service level agreement.

3. (Currently Amended) The quality assured network service provision system compatible with a multi-domain network according to claim 2, wherein

said network service management device comprises: an input and output device for input, by an operator, of the service information on services which can be provided by said provider and domain information made up of configuration information about an operations management network of said provider;

storage devices for storing information input from said input and output device by information type;

a workflow server for determining transfer destinations for processing commands from among a customer care server, a design server, a policy server, and a bandwidth broker, which form a network service management device cluster, based on each service request from a customer;

athe bandwidth broker for registering said domain information and service information in said service broker device, and determining, in cooperation with said workflow server, whether a subject for executing a subsequent process due to the service request from the customer is the service broker device which is an external system or the network service management device cluster which is an internal system; and

an internal processing system for detecting setting information for a communication device and the status of provisioning, and performing processing management of information required by said communication device setting and control so as to satisfy the required quality level from the customer.

4. (Currently Amended) The quality assured network service provision system compatible with a multi-domain network according to claim 2, wherein
said service broker device comprises: a storage device for storing the service information and the domain information received from said network service management device; and

a data processing device for performing information processing such as writing and reading of information to and from said storage device, as well as providing a security management function relative to said bandwidth broker.

5. (Currently Amended) The quality assured network service provision system compatible with a multi-domain network according to claim 3, wherein
said bandwidth broker and said workflow server have a means for deciding, based on logic, whether a~~the~~ subject for executing a subsequent process due to a~~the~~ customer service request is in a~~the~~ external system or a~~the~~ internal system; and

said bandwidth broker has a means for deciding a domain in cases where a~~the~~ subject for executing a subsequent process is in a~~the~~ external system; and

said workflow server has a means for deciding an internal processing system of a forward destination in cases where a~~the~~ subject for executing a subsequent process is in a~~the~~ internal system.

6. (Currently Amended) The quality assured network service provision system compatible with a multi-domain network according to claim 3, wherein

said service broker device has: a means for referring to the service information which can be provided by the respective domains which is output from the network service management device and stored in a service storage section, the service information including resource information managed by the design server, provisioning information managed by the policy server, and network configuration information, and deciding whether a~~the~~ subject for executing a~~the~~ subsequent process

due to ~~the~~ customer service request is the service broker device in which is an ~~the~~ external system or the network service management device cluster which is an ~~the~~ internal system;

a means for deciding an external forward destination in cases where ~~the~~ subject for executing a subsequent process is in ~~an~~ the external system; and

a means for deciding an internal processing system of a forward destination from among the customer care server, the design server, the policy server, and the bandwidth broker in cases where ~~the~~ subject for executing a subsequent process is in ~~an~~ the internal system.

7. (Currently Amended) The quality assured network service provision system compatible with a multi-domain network according to claim 3, wherein

said internal system comprises: the customer care server; the design server; the policy server; and a network management device,

~~the~~ customer care server ~~for managing~~ manages service order information received from customers;

~~the~~ design server ~~for managing~~ manages network resources of an operations management network of a provider;

~~the~~ policy server ~~for reading~~ reads pre-recorded policy information, as well as ~~converting~~ converts said policy information into the setting information for a communication device of a specific vendor, and ~~performing~~ performs provisioning of a communication device for the provision of a service; and

~~the~~ network management device ~~for providing~~ provides a network fault management function for a configuration management and open channel incorporating communication devices within an operations management network of a provider and connection configuration of circuitry for connecting said communication devices,

each of which is connected to said workflow server.

8. (Currently Amended) A method of providing a quality assured network service compatible with a multi-domain network comprising:

- a plurality of operations management networks (domains) which are connected to a plurality of customer networks with user terminals and which are respectively managed by different providers; ~~and incorporating~~
- a network service management device for collectively controlling device clusters incorporated within an operations management network of each of said providers, and negotiating with another operations management network which is managed by another provider and with which interconnection is to be established based on a required quality level from a customer so as to ensure an end-to-end required quality level; and
- a service broker device at ~~the~~ functional host layer of said network service management device for providing a broker function for interconnecting the operations management networks of said plurality of providers, wherein said method comprises:
 - a service registration step in which a network management device of each provider registers in said service broker device, domain information comprising configuration information and service information on services which can be provided by the respective domains which are output from the network service management device which belongs to each of the providers;
 - a service agreement step in which a request is received from the customer, said service broker device and said network management device reach an agreement relating to service conditions for providing a service which will satisfy athe required quality level, and route information for an appropriate domain and a network management device are selected for ensuring an end-to-end quality level required by the customer based on the service information and domain information; and

a service provisioning step for performing service provisioning on a communication device based on service conditions and route information agreed upon in said network management device.

9. (Previously Presented) The method of providing a quality assured network service compatible with a multi-domain network according to claim 8, wherein said service provisioning step further comprises a step for service order processing, a step for route design processing, and a step for provisioning processing.

10. (Currently Amended) A service broker device in an interconnected network for a network comprising a plurality of operations management networks (domains) which are connected to a plurality of customer networks with user terminals and which are respectively managed by different providers, the service broker device being provided with

a broker function for receiving service information on services which can be provided by the respective domains and domain information which are output from a network service management device which belongs to each of the providers, storing information on the plurality of operations management networks managed by the respective providers, and brokering a service level agreement between the operations management networks which are managed by the providers and which are to be interconnected based on a required quality level from a customer by selecting route information and a network service management device for ensuring an end-to-end quality level required by the customer based on the received service information and domain information,

wherein said service broker device is at a functional host layer of a network service management device.

11. (Currently Amended) The quality assured network service provision system compatible with a multi-domain network according to claim 1, wherein a single service broker device is provided in the communication network, and the service broker

device manages the domain information and the information on services which can be provided by the respective providers for all the operations management networks connected thereto.

12. (Previously Presented) The quality assured network service provision system compatible with a multi-domain network according to claim 1, wherein the service broker device designs an inter-domain connection route and the network service management device designs an intra-domain route so as to satisfy the required quality level.

13. (Previously Presented) The quality assured network service provision system compatible with a multi-domain network according to claim 1, wherein quality levels which can be provided and methods for specifying the quality levels are different for the respective providers, and the service agreement is reached in such a way that required quality levels are associated with service levels in the respective providers in order to maintain the quality levels at a constant level in the multi-domain network.

14. (Currently Amended) The quality assured network service provision system compatible with a multi-domain network according to claim 1, wherein a bandwidth broker provided in the network service management device refers to available resource capacity between the domains and the service information, and determines whether an agreement is possible by checking whether requested service information can be accommodated by a service agreed to between the domains.

15. (Previously Presented) The quality assured network service provision system compatible with a multi-domain network according to claim 1, wherein the agreement is one relating to service conditions for providing a service of consistent quality throughout the multi-domain network which satisfies the required quality level.

16. (New) The quality assured network service provision system compatible with a multi-domain network according to claim 2, wherein the network service management device includes a means for negotiating with the other network service management device belonging to the other domain with which interconnection is to be established under a condition for satisfying the required quality level from the customer which is included in a response received from the service broker device, for detecting the status of communication devices constituting each domain, and for performing setting and control for satisfying the required quality level.

17. (New) The quality assured network service provision system compatible with a multi-domain network according to claim 16, wherein the network service management device transfers a service level agreement request which is necessary to provide the end-to-end quality level required by the customer to the other network service management device belonging to the other domain, and if the other network service management device accepts the service level agreement request, the other network service management device registers service level agreement information included in the service level agreement request, sends a reply with respect to the acceptance of the service level agreement request, and negotiates the service level agreement.

18. (New) The quality assured network service provision system compatible with a multi-domain network according to claim 1, wherein the required quality level is an error rate or a delay value.